REMARKS

By this amendment, claims 1, 11, the title and the drawings are amended and claim 5 is canceled to place this application in immediate condition for allowance. Currently, claims 1-4 and 6-14 are before the Examiner for consideration on their merits.

First, a Letter to the Draftsperson is submitted herewith to address the drawing formalities noted in the Office Action. More particularly, the lead lines for reference numerals 20, 23, and 24 are moved to identify the three layers making up the detector. Similarly, the lead line for mask layer 32 in Figure 6a is properly located. With these changes, the drawings are now in compliance with PTO requirements and the objection should be withdrawn.

Second, the rejection of all claims under 35 U.S.C. § 103(a) based on the combination of United States Patent No. 6,323,818 to Koh et al. (Koh) when combined with WO 98/42486 to Bishop et al. (Bishop). In making the rejection, the Examiner contends that the only difference between the independent claim 1 and Koh is the failure of Koh to employ a via extending through a substrate for connection to a signal output. The Examiner cites Bishop to allege that vias are known and that it would be obvious to employ one in the device of Koh.

For method claim 9, the Examiner characterizes the difference between the invention and Koh as the use of multiple etchings and asserts that employing such a technique does not lend patentable merit to the claims.

Applicants traverse the rejection on the grounds that the Examiner has not established a *prima facie* case of obviousness against either of claims 1 or 9. The traversal is set out below under the headings of the rejected independent claims.

CLAIM 1

Claim 1 is revised to include the limitation of claim 5 therein. The rejection does not address the issue of whether the mixing channel intersects the local oscillator waveguide at an acute angle. This failure alone taints the rejection and requires its withdrawal.

Moreover, a review of Koh reveals that there is no teaching regarding the arrangement of the mixing channel and waveguide as now required by claim 1. Koh teaches a horn, waveguide 44, and waveguide 50, see Figure 5. There is no specific recitation of the waveguide receiving a filter or a mixer.

Regardless of whether or not the mixing channel is present, Applicants submit that the features of claim 5 are not found in Koh or Bishop. This failing means that a *prima facie* case of obviousness cannot be established based on Koh, whether or not Bishop is combined therewith.

In addition, the acute angle intersection of the mixer channel and local oscillator waveguide (the arrangement) provides a number of advantages over the prior art and these advantages further substantiate the argument that claim 1, as amended, is patentable, see page 5, line 21 to page 6, line 1.

First, the arrangement improves the bandwidth of the mixer transition in comparison to the conventional 90° arrangement typically found in the prior art.

Second, the arrangement reduces the space occupied by each detector, thus allowing them to be placed closer and employ a larger number of them. This improves the resolution of the camera.

These advantages cannot be derived from Koh or Bishop, and they weigh in favor of the patentability of claim 1.

Bishop does not supply the missing feature of Koh. Therefore, this reference, even if combined with Koh, does not establish a *prima facie* case of obviousness against claim 1.

In light of the arguments made above, the prior art cited by the Examiner does not obviate claim 1 and the rejection must be withdrawn.

Since claim 1 is patentable over the cited prior art, its dependent claims are also patentable over Koh and Bishop.

CLAIM 9

Turning to claim 9, Koh and Bishop do not establish a *prima facie* case of obviousness. The invention and Koh are fundamentally different in terms of the number of etchings and substrates. In Koh, several substrates are used to obtain a multilevel structure. According to claim 9, three different etch depths are obtained on a single substrate. This is accomplished by the following:

1) The first mask has a first pattern corresponding to a first region of highest etch depth.

2) A second mask has a second pattern corresponding to the first region and to a second region with an intermediate etch depth.

3) A third mask has a third pattern corresponding to the first and second regions and to a third region having the shallowest etch depth.

As a consequence of this arrangement, which is detailed in claim 9, the first mask is used for the highest etch depth, the second mask used for the highest etch depth and intermediate etch depth, with the third mask used for the three etch depths.

For the highest etch depth, the shape is given by the first region of the first mask, and the etching is pursued with the other two masks, which have a larger pattern, but during the etching through the second and third masks, the shape of the first region is retained. This means that the region of highest depth will have the required first pattern corresponding to the first region and

an etch depth that is the sum of the etch depths obtained during the etching steps through the three masks.

For the intermediate etch depth, the shape is given by the second region of the second pattern of the second mask and the etching is pursued with the third mask which has a large pattern, but during the etching through the third mask, the shape of the second region is retained so that the region of the intermediate etch depth will be the required second region and an etch depth that is the sum of the etch depths obtained during the etching step through the second and third mask.

For the shallowest etch depth, the shape is given by the third pattern of the third mask, and the etch depth is the etch depth that is obtained during the etching step through the third mask.

This sequencing of events is best seen in Figures 6a-6d, with the first region being located between the second and third regions, and the third region to the left of the first region when viewing the drawing. It can be seen from these Figures that the configuration of the various regions results in the highest etch depth in the first region and the lowest etch depth in the third region. This is all accomplished with specially configured masks and a single substrate.

In contrast, Koh teaches multiple substrates to form the desired structure, and even if multiple masks are used, multiple substrates are employed as well. Since claim 9 defines an etching regimen using three masks on a substrate, it cannot be said that Koh teaches or suggests the claimed method.

Bishop adds nothing to Koh in this regard and even if combined therewith, a *prima facie* case of obviousness is not established.

In order to continue to reject method claim 9, the Examiner would have to provide some other rationale for forming the structures of Koh using the claimed technique. However, there is no factual basis in the cited prior art to support such a modification and there is no basis to make a further rejection under 35 U.S.C. § 103(a).

Thus, claim 9 is also patentable over Koh and Bishop and the rejection should be withdrawn. The remaining dependent claims 10-14 are also patentable by reason of their dependency on claim 9.

Accordingly, the Examiner is requested to examine this application and pass all pending claims onto issuance.

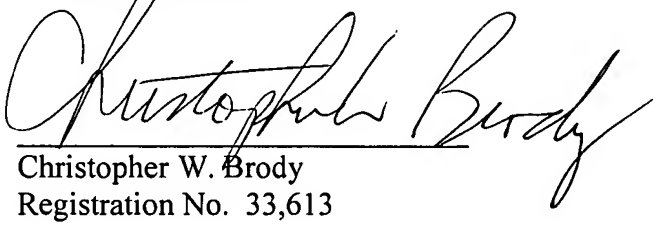
If the Examiner believes that an interview would be helpful in expediting the allowance of this application, the Examiner is requested to telephone the undersigned at 202-835-1753.

Again, reconsideration and allowance of this application is respectfully requested.

The above constitutes a complete response to all issues raised in the Office Action dated October 17, 2007.

Applicants respectfully submit that there is no fee required for this submission, however, please charge any fee deficiency or credit any overpayment to Deposit Account No. 50-1088.

Respectfully submitted,
CLARK & BRODY



Christopher W. Brody
Registration No. 33,613

Customer No. 22902
1090 Vermont Avenue, NW, Suite 250
Washington, DC 20005
Telephone: 202-835-1111
Facsimile: 202-835-1755
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